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The company you keep: Networks in a community of informal education evaluators

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ABSTRACT

We investigate the relationship between characteristics of a professional network and members' evaluation-related learning, applying the "communities of practice" framework to understand social dynamics and information flows. We focus on members of the Association of Zoos and Aquarium (AZA)'s Conservation Education Committee. These professionals collaborate to design, execute, and evaluate programs. Individuals (n = 35) completed a survey and participated in semi-structured interviews, allowing us to explore relationships, identify factors influencing communication, and better understand members' approaches to program evaluation. We found that connections were made based on general expertise and reputation rather than individual subject knowledge. The combination of network and qualitative data reveal where information is being isolated and suggest strategies for more effective dissemination of evaluation-related knowledge and practice.

1. Introduction

Humans are social animals; as such, our behaviors are influenced by interactions and relationships with each other. By extension, and perhaps not surprisingly, these critical and influential social interactions also affect how and what we learn as well as how we put that learning into practice. A number of key frameworks and theories have been developed to address the nature of learning in social groups; communities of practice is one such framework. The term "communities of practice" (CoP) has been used to describe groups of individuals organized around a common task and the learning that occurs within that group with respect to that task (Lave & Wenger, 1991). Social learning – learning that occurs through the co-construction of knowledge via group-member interactions (Newig, Günther, & Pahl-Wostl, 2010; Coleman, 1993; Reed et al., 2010) – can be facilitated through the activities of a CoP (Brown & Duguid, 2001; Swan, Scarbrough, & Robertson, 2002), making these communities critical to the functioning of organizations and professional groups. In the context of a CoP, individuals' understandings can change by engaging in the social activities or practices of a community (Lave, 1993); these practices often involve working toward a common goal (Barab et al., 1999), which can then influence changes in the group through their continued engagement and shared learning experiences (Wenger, 2000).

The CoP framework accounts for the presence of individuals with a variety of experience and incumbency levels, from newcomer to veteran, and positions in the community ranging from core to periphery (Wenger, 2000). Core members are often the most active, participating frequently and deeply in the community's activities; they also may have formal leadership roles within the CoP. By contrast, peripheral members may only participate in the activities required to retain their community membership; they may move toward the core if they become more active (Wenger, MacDermott, & Snyder, 2002).

In initial writings on the CoP framework, Wenger (1998) suggests 14 characteristics indicating the existence of a CoP:

Abbreviations: AZA, Association of Zoos and Aquariums; CEC, Conservation Education Committee; CoP, community of practice; EE, environmental education; SNA, social network analysis.

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- Sustained mutual relationships (harmonious or conflictual)
- Shared ways of engaging in doing things together
- The rapid flow of propagation and flow of innovation
- Absence of introductory preambles, as if conversations and interactions were merely the continuation of an ongoing process
- Very quick set-up of a problem to be discussed
- Substantial overlap in participants' descriptions of who belongs
- Knowing what others know, what they can do, and how they can contribute to an enterprise
- Mutually defining identities
- The ability to assess the appropriateness of actions and products
- Specific tools, representations, and other artifacts
- Local lore, shared stories, inside jokes, and knowing laughter
- Jargons and shortcuts to communication, as well as the ease of producing new shorthand terms
- Certain styles recognized as displaying membership
- A shared discourse reflecting a certain perspective on the world

Members of a CoP often work or operate in close proximity to one another, though functional CoPs can develop among individuals in different physical locations (Baker-Eveleth, Sarker, & Eveleth, 2005). The CoP framework commonly has been used in workplace studies (e.g., Fuller, Hodkinson, Hodkinson, & Unwin, 2005; Brown & Duguid, 2001), although few studies implement the CoP framework in tandem with a quantitative approach, such as social network analysis. Each approach independently provides insights into communities and the links among their members, but similarly overlooks important elements that could provide deeper insights into learning processes. Together, the approaches can help identify areas for improvement and intervention in the flow of resources or information (Cross, Laseter, Parker, & Velasquez, 2006).

1.1. Social network analysis

Social network analysis (SNA) is an approach to analyzing relationships among a system's actors, such as individuals, groups, or organizations (Wasserman & Faust, 1994). SNA assumes that the actors are interdependent, resources flow between the actors, and the network structures resulting from actors' interactions have an impact on individuals' abilities to act within that system (Vance-Borland & Holley, 2011; Wasserman & Faust, 1994).

SNA has been implemented in studies of collaborating professionals (e.g., Cross, Borgatti, & Parker, 2002) as well as learning systems (e.g. Shen, Nuankhieo, Huang, Amelung, & Laffey, 2008), among other professional and social relational groups. In communities of educators, such as the one examined in this study, members often form networks and may influence one another with regard to evaluation practices, sharing ideas or resources. In such cases, SNA can provide information about the structure of the network emerging from these interactions and the positions that individual actors may hold in that network. One potentially informative set of measures focuses on centrality within a network; this can identify areas in the network where influence is occurring or where relationships help or hinder what influence or information is shared.

1.2. Communities of practice and social network analysis

Independently, the communities of practice framework and social network analysis each provide insights into groups of actors and the links between individuals; yet, the two have complementary qualities that, when coupled, can deepen understanding of social learning that occurs through participation in a community. In the past, SNA has been used in similar workplace studies; however, to date, only a few studies (e.g., Boud & Middleton, 2003; Cross et al., 2006; Penuel et al., 2010) have considered SNA and CoP in tandem. Thus, considerable opportunities exist to integrate these two to facilitate deeper understanding of learning in networked communities. Particularly, in its quantitative applications, SNA may help in understanding network composition and structure, although these approaches to network analysis often provide less insight into qualitative aspects of the existing relationships and the nuanced perceptions of these relationships among actors. As one lens for qualitative inquiry, the CoP framework can offer deeper insight into these relationships. Applying SNA can enhance the utility of the CoP framework by identifying areas for improvement and intervention in the structure of a networked community (Cross et al., 2006); for example, SNA can help identify where information flows (or does not flow) as well as the factors influencing this movement.

In this study, we investigate a professional community of environmental educators, specifically considering how this network is structured and how this structure correlates with social learning, using evaluation as an exemplary task. The educators in this study are geographically disparate, yet they often collaborate within a tightly structured industry, with highly trained and specialized employees who share common goals and a sense of camaraderie related to their job duties and professional backgrounds. Studies of such CoPs examine how individuals learn from others through interactions and relationship building (e.g., Boud & Middleton, 2003). Our findings analyze qualitative and quantitative data to examine how one's position in this geographically dispersed community correlates to how members perceive of, and use, the community's evaluation resources. Data generated through this research can be used to trace the paths along which resources – in this case, those related to evaluation – move through communities and curate networks to encourage sharing of accurate, reliable information and the dissemination of innovation.

1.3. Background

With mounting pressures threatening the natural environment, there is an increased recognition of the importance of engaging individuals and communities in efforts to address challenging and multifaceted environmental issues (Ardoin, 2014; Stern & Dietz, 2002). Environmental education (EE) works to build awareness and knowledge of environmental problems as well as the skills necessary to address these challenges (Tbilisi, 1978). EE takes a range of forms – from information provision to outreach to capacity building (Scott & Gough, 2003; Monroe, Andrews, & Biedenweg, 2008) – and occurs in both formal (i.e., classroom) and informal (e.g., zoo and aquarium) settings (Heimlich, 2010). Zoos and aquariums are some of the world's largest providers of EE, serving more than 180 million people annually (Association of Zoos and Aquariums, 2014; Gusset & Dick, 2011; Whitehead, 1995); the ubiquity and accessibility of these informal settings makes them important for science and environmental learning (Falk & Dierking, 2002; Falk, Heimlich & Foutz, 2009).

Zoos and aquariums provide wildlife experiences that allow visitors to view live animals in naturalistic habitat settings; this context is especially important in urban areas where interaction with wildlife can be infrequent (Andersen, 2003). Zoo and aquarium education often aims to inspire visitors to be aware of and participate in environmental conservation efforts (Patrick, Matthews, Ayers, & Tunnicliffe, 2007). These institutions operate under the premise that providing visitors with firsthand contact with animals can increase environmental and conservation-related knowledge, enhance positive attitudes, and encourage pro-environmental behaviors toward wildlife and their habitats (Fraser & Wharton, 2007; Ballantyne, Packer, Hughes, & Dierking, 2007).